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A STIMULATING EXPLANATION OF THE EXTRAGALACTIC RADIO EXCESS

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The extragalactic radio background in a frequency range of roughly 22 MHz -- 90 GHz has been observed to be significantly brighter than standard astrophysical expectations of radio emission. It has also been shown to be unusually isotropic: they are unlikely to trace dark matter halos at $z < 5$, unless these halos are themselves unexpectedly smooth. In this talk, I will describe a simple dark sector model that can successfully produce an extragalactic radio background with the right brightness and spectrum. The radio excess is produced by the stimulated decay of dark matter into a dark photon, which resonantly oscillates into radio frequency photons after recombination. Preliminary estimates show that this model produces a relatively smooth background that is consistent with measurements of the extragalactic radio background anisotropy.

